

STEVEN HALL: So one of the nice things about this approach is that, first of all, the students are always engaged. They're actively engaged in their learning. They're not passively listening to me try to explain the important features of a problem.

By standing up and working at the board, I can see what all the students are doing in the room at the same time. So I can tell from across the room if a group is having trouble. I can tell from the middle of the room if the entire class is maybe lost.

So it gives me a lot of options. I can go help students who are having trouble. I can stop the class. I can lecture a little bit to help with a broad misconception that they may have.

But more importantly, when the students are standing, they're much more likely to share the responsibility for doing the problem. What I've found is that when they're working at tables, even if we ask them to work together, the tendency is to turn to the piece of paper in front of them and work alone. But by standing up, sharing a blackboard, no one can monopolize. Anyone can step in and do a problem.

So in a conventional class, the opportunities for feedback are essentially, when you grade the problem sets, you have some inkling of whether students understand the material. But really, you learn whether students know the material at the quiz at which point it's too late. The students have already scored perhaps poorly on the quiz. But by then, you've moved on to other material.

So one of the nice things about active learning is that it provides feedback at multiple times scales. So in a lecture, if you have a concept quiz on material that you've just lectured, you might discover that the lecture was completely ineffective. Or you might discover that it was very effective, and you can move on to new material.

The same is true in recitation. Especially in the recitations that I've been doing in 16.06 where we emphasize skills, you can see over the weeks the progression of skills. Students get better and better at a core skill that they need later on. And in our case, it's things like root locus and Bode plots. You can really see week to week that they get much better at what they're doing.